

about Wilmington, Del. Heavy rain and hailstorms were reported in Lancaster county, Pa., and Harford county, Md. A heavy rainstorm caused much damage at and about Council Bluffs, Iowa. At West Bend, Iowa, a hailstorm did considerable damage in a path about  $\frac{1}{2}$  mile in width. An unusually severe rainstorm was reported at Helena, Ark., at night. A destructive hailstorm was reported near Ardoch, N. Dak., in the afternoon. Heavy rain in the mountains near Mount Pleasant, Utah, caused damage to bridges, etc. Flood, resulting from heavy rain in the mountains, was very destructive at Austin, Nev.

**29th.**—An exceptionally heavy rain and thunderstorm

visited Wicomico, Baltimore, Harford, and Cecil counties, Md., in the morning, causing damage by flood. The storm was also severe in Delaware. Damage was caused to fruit and crops near Hudson, Mich., by a hailstorm. Heavy thunder, rain, and hailstorms visited the sections about Sulphur Springs, Storm Lake, and Alta, Iowa.

**30th.**—Severe thunderstorms occurred over Long Island and New Jersey. At Woodbury, N. J., lightning struck in several places. Very heavy thunder and rainstorms visited Williamsport and Carlisle, Pa., in the afternoon and evening. Heavy rain about West Point, Miss., flooded a part of that town, swept away bridges, and submerged cotton fields.

## INLAND NAVIGATION.

### FLOODS.

At Kansas City, Mo., the stage of water in the Missouri River was 23.1 feet, 2.1 feet above the danger-line, the morning of the 1st, and the streets of Harlem, on the opposite bank of the river, and surrounding small farms were under water. The river reached its maximum height during the day, and at 5 p. m. had fallen 0.2 foot. On the 2d the river had fallen 0.4 foot at Kansas City, and by the 4th it was below the danger-line. On the 6th the river commenced to rise at Kansas City, and the morning of the 7th it was 0.7 foot below the danger-line. On the 8th it was 0.3 foot below the danger-line, and nearly stationary, and by the 9th it had commenced to fall.

At Sioux City, Iowa, the stage of water in the Missouri River was 14.6 feet the morning of the 4th, the highest point reached this season, and large quantities of logs and drift were running, causing considerable damage to the construction work of the Pacific Short Line bridge. On the 5th the river was falling steadily at Sioux City.

A report of the 6th stated that the Missouri River had formed a new channel at Doniphan Point, one mile east of the one formed the preceding week, and that a number of valuable Missouri farms were submerged. The Missouri River cut its banks and changed channel at several points south of Pierre, S. Dak., during the month.

On the 8th and 9th high water was reported in the Kanawha River, W. Va., and tributaries, and several booms were broken, letting out great quantities of logs.

The new lake in the Colorado Desert, near Salton, San Diego Co., Cal., presented no material change during the month.

Heights of rivers above low-water mark, July, 1891 (in feet and tenths).

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
<i>Red River.</i>						
Shreveport, La. ....	29.9	1	16.9	31	3.5	13.4
<i>Arkansas River.</i>						
Fort Smith, Ark. ....	22.0	31	15.2	25, 26	4.2	11.0
Little Rock, Ark. ....	23.0	1	16.5	27, 28	6.1	10.4
<i>Missouri River.</i>						
Fort Buford, N. Dak. ....	18		14.7	31	11.8	2.9
Sioux City, Iowa. ....	18.7	4	14.6	12	11.2	3.4
Omaha, Nebr. ....	18.0	1, 5, 6	13.9	14, 25	11.1	2.8
Kansas City, Mo. ....	21.0	1	23.1	19, 26	15.1	8.0
<i>Mississippi River.</i>						
Saint Paul, Minn. ....	14.0	2	2.9	18	1.9	1.0
La Crosse, Wis. ....	13.0	1-8	4.6	30, 31	2.4	2.2
Dubuque, Iowa. ....	16.0	9	4.9	28-31	2.3	2.6
Davenport, Iowa. ....	15.0	9, 10	3.4	30	1.2	2.2
Keokuk, Iowa. ....	14.0	7, 12	3.6	31	1.4	2.2
Saint Louis, Mo. ....	36.0	4	23.7	30	14.0	9.7
Cairo, Ill. ....	40.0	7	24.6	31	14.0	10.6
Memphis, Tenn. ....	33.0	1	19.4	31	10.9	8.5
Vicksburg, Miss. ....	41.0	5-8	29.4	31	17.7	11.7
New Orleans, La. ....	13.0	10	10.2	31	5.5	4.7
<i>Ohio River.</i>						
Parkersburg, W. Va. ....	38.0	12	12.8	4	5.2	7.6
Cincinnati, Ohio. ....	45.0	14, 15	18.2	23, 24	9.7	8.5
Louisville, Ky. ....	24.0	1	8.6	23, 24	5.5	3.1
<i>Cumberland River.</i>						
Nashville, Tenn. ....	46.0	6	5.3	30	1.7	3.6
<i>Tennessee River.</i>						
Chattanooga, Tenn. ....	33.0	31	5.7	18	2.7	3.0
Knoxville, Tenn. ....	29.0	31	2.2	7, 14, 15	1.2	1.0
<i>Monongahela River.</i>						
Pittsburg, Pa. ....	29.0	9	12.5	15	2.7	9.8
<i>Savannah River.</i>						
Augusta, Ga. ....	32.0	31	12.6	5, 6	6.4	6.2
<i>Willamette River.</i>						
Portland, Oregon. ....	15.0	1	11.8	31	6.7	5.1
<i>Susquehanna River.</i>						
Harrisburg, Pa. ....	17.0	25	4.4	17, 18, 23, 24	2.0	2.4
<i>Alabama River.</i>						
Montgomery, Ala. ....	48.0	11	4.8	5, 20, 23	1.5	3.3

## ATMOSPHERIC ELECTRICITY.

### AURORAS.

Auroras were reported as follows: 1st, East Machias, Me. 3d, Medford, Wis. 5th, South Canisteo, N. Y. 6th, Wolsey, S. Dak. 12th, Rockland, Mich. 14th, East Machias, Me. 17th, Peshtigo, Wis. 27th, East Machias, Me. 31st, Salem Corners, Pa.

### THUNDERSTORMS.

Description of the more severe thunderstorms reported for the month is given under "Local storms."

Thunderstorms were reported as follows: East of the Rocky Mountains they were reported in the greatest number of states, 31, on the 28th; in 20 to 30 on the 2d to 4th, 7th, 14th to 18th, 20th to 27th, 29th, and 30th; in 10 to 19 on the 1st, 5th, 6th, 8th, 10th, 11th, 13th, 19th, and 31st; and in 9 on the 12th. There was no date for which thunderstorms were reported east of the Rocky Mountains in less than 9 states.

East of the Rocky Mountains thunderstorms were reported on the greatest number of dates, 30, in Florida; on 20 to 29 in

Arkansas, Iowa, Kansas, Louisiana, Minnesota, Mississippi, Missouri, Nebraska, New York, North Carolina, Pennsylvania, South Dakota, and Texas; on 10 to 19 in Alabama, Connecticut, Georgia, Illinois, Indiana, Maine, Maryland, Michigan, Montana, New Jersey, North Dakota, Ohio, South Carolina, Tennessee, Virginia, West Virginia, and Wisconsin; and on 1 to 9 in Delaware, District of Columbia, Indian Territory, Kentucky, Massachusetts, New Hampshire, Oklahoma Territory, Rhode Island, and Vermont. There was no state east of the Rocky Mountains in which thunderstorms were not reported on 1 or more dates.

West of the Rocky Mountains thunderstorms were reported in Arizona on the 2d, 3d, 5th, 12th, 14th to 20th, 22d, and 24th to 26th; in California on the 4th, 10th, 23d, 25th, 27th, and 29th; in Colorado on the 2d to 7th, 12th, and 14th to 31st; in Idaho on the 10th, 16th to 19th, 22d, 25th, 26th, 29th, and 30th; in Nevada on the 1st, 2d, 6th, 18th, 20th, and 22d to 31st; in New Mexico on the 3d to 8th, 10th, 13th to 16th, 19th,